PARTNERSHIP FOR CLEAN INDOOR AIR

January 2005 Issue 2

PCIA Bulletin

This quarterly newsletter provides updates on the activities of the Partnership for Clean Indoor Air (PCIA) and its Partners to improve health, livelihood and quality of life by reducing exposure to indoor air pollution, primarily among women and children, from household energy use. This voluntary Partnership is bringing together over 80 governments, public and private organizations, multilateral institutions, and others to increase the use of affordable, reliable, clean, efficient, and safe home cooking and heating practices. *Please visit www.pciaonline.org to join!*

Partnership Meeting in Morocco!

You are invited to participate in the Partnership for Clean Indoor Air (PCIA) Meeting on March 23 – 24, 2005 in Marrakech, Morocco. The meeting will take place in conjunction with the International Forum on Partnerships for Sustainable Development being held in Marrakech March 21 – 23, 2005, which you are also invited to attend. For more information on the Forum, visit http://www.minenv.gov.ma/forum-part.2005.

The Partnership meeting will provide a terrific opportunity to enhance your work by networking with other governments and non-governmental organizations working on household energy and health. During interactive sessions, you and other meeting participants will be asked to share your successful strategies for increasing the use of improved stove and fuel technology and reducing exposure to indoor air pollution.

You will learn new approaches for raising public awareness of the dangers of indoor air pollution and the benefits of improved home cooking and heating practices, and successful strategies for developing local markets for improved technology. You will also learn about tools and resources for improving stove and fuel technology and monitoring indoor air pollution. As part of these sessions, you will be asked to help identify where the Partnership can provide the greatest value added in each region.

Together we will develop a strategy for engaging host country governments, non-governmental organizations and the private sector in the mission of the Partnership. At the end of the two-day workshop, you will have helped to map out a two-year action plan for the Partnership in 2005 and 2006. You will learn about the many training opportunities that are already being planned by partners around the world, as well as help identify additional training and resource needs and opportunities.

Finally, you will have the opportunity to voice your preferences for possible Partnership governance structures, and consider how you can serve in an advisory or leadership role within these structures. *See Happenings for registration information.*

In This Issue

PARTNER SPOTLIGHT

In recent months, there has been considerable activity in India on behalf of the Partnership for Clean Indoor Air. This issue of the Bulletin features an overview of the activities undertaken by the Indian partners. The following articles feature the two-day stove workshop which was jointly sponsored by the Shell Foundation and the PCIA; press coverage on the Partnership's activities in India; and a roundtable on 'Impacts of Household Energy and Indoor Air Pollution on Health and Development,' which was organized by the PCIA and hosted by Development Alternatives.

International Improved Cookstove Development Camps in India

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We just returned from India where we had the pleasure of conducting two week-long workshops on wood-burning cook stoves sponsored by the Shell Foundation and the Partnership for Clean Indoor Air. The first camp was organized by Development Alternatives and was held at the TARAgram research station about 400 km south of Delhi. The second was organized by Appropriate Rural Technology Institute (ARTI) and was held at their field center near Phaltan, about 250 km from Mumbai.

Participants included directors, engineers, field coordinators, craftsmen and others from many parts of India. Dr. Liu (Sino-Dutch Cooperation Project) and Professor Hao (China Association of Rural Energy Industry), who directs the rural cookstove program in China, also took part and all participants enjoyed their insights and enthusiasm.

Participants testing stove efficiency in one of the sessions during the camp

The idea of a stove camp is to allow consultants from Aprovecho Research Center to present some of the ideas and guidelines for stove design and manufacturing and teach basic classes on combustion, health, safety and other stove-related topics. We often learn as much as we teach and the greatest value comes from the exchange of ideas.

The camp emphasized hands-on activities including contests between teams to build and test 3-stone fires. Teams were also challenged to design and build new stoves, which incorporate design ideas from Aprovecho, China and the host country of India. Competition was fierce and good-natured and almost all of the new designs were at least twice as good as the 3-stone fire in wood consumption and time to boil. Some of the new designs were very clean burning as well.
Proper use of insulation and manufacturing insulative ceramics from local materials are an important part of the training program. A variety of materials were provided including: several types of clay, sawdust, vermiculite, perlite, cement, ash and different types of dung. People developed their own recipes to use these materials to create bricks, which were light enough to float on water. Test samples were fired in an open fire the next day and a contest was held to see "will it float?" Most of the samples floated although some were too soft to use in stoves. A half dozen of the recipes produced ceramics which were both light and strong and would likely make excellent combustion chambers and insulation for stoves.

The class as a whole also built a "Justa" or griddle stove, with a chimney, which has been successfully introduced in Central America. Some of the group liked this stove and thought that it might be possible to adapt this design into a culturally acceptable version for their areas of the country. Special use ovens and institutional stoves were also discussed and a large (40 liter) barrel stove with chimney was built and demonstrated.

The stove camps also provided a chance to hear other speakers talk about their areas of interest. At TARAgram we were particularly interested in Professor Hao's lecture on design principles and the stove program in China. At ARTI we were able to hear Dr. Karve's lecture on the innovative new biogas generator for households and also see it in action. The new digester can produce about 250 kg of methane per ton of feedstock and the reaction takes only one day to complete. Typical feedstock materials include waste grain, plant

seeds, oilcake of non-edible oil seeds, and non-marketable or non-edible fruits. The last day was used to review previous work and to discuss the problems and strategies for dissemination of stoves.

Press Coverage in India
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On Monday, November 8, 2004, Robert Blake, the U.S. Embassy's Deputy Chief of Mission in India and Marco Di Capua the Embassy's Science Counselor, hosted a press conference and donation ceremony to announce the two Partnership for Clean Indoor Air Pilot Projects in India. The two pilots will demonstrate effective approaches to reduce people's, primarily women and children's, exposure to indoor air pollution and increase the use of affordable, clean, reliable, efficient, and safe home cooking practices.

Dr. A.D. Karve, President of the Appropriate Rural Technology Institute (ARTI), discussed how the ARTI project will replace existing fuel-stove combinations with a compact biogas system in more than 2,000 households in the State of Maharashtra. Dr. Ashok Khosla, President of Development Alternatives (DA), discussed how the DA project will raise awareness of the health benefits of clean indoor air and the advantages of improved cooking solutions in 50,000 households in the States of Madhya Pradesh and Uttar Pradesh. Dr. Khosla estimates that more than 15,000 households, or 30% of the target population, will adopt clean energy solutions.

From left to right: Marco Di Capua (Science Counselor, US Embassy – India), Robert Blake (Deputy Chief of Mission, US Embassy - India, Dr. Ashok Khosla (DA), Dr. A.D. Karve (ARTI), John Mitchell (PCIA-EPA)

The event was well covered by the Indian Press and resulted in much needed publicity on both the magnitude of the household energy challenge in India and some of the initiatives underway to address that challenge.

A Roundtable Discussion on "Impacts of Household Energy and Indoor Air Pollution on Health and Development"
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Roundtable Discussion on "Impacts of Household Energy and Indoor Air Pollution on Health and Development", organized by the Partnership for Clean Indoor Air (PCIA) and hosted by Development Alternatives was held at the India Habitat Centre, New Delhi on November 9, 2004. Participants from a diverse range of backgrounds took part in the Roundtable. They learned more about the PCIA, its mission and current initiatives, shared highlights of their own household energy programs, and explored opportunities to work together in furthering common goals.

In his welcome to the roundtable, Dr. Ashok Khosla, President of Development Alternatives, exhorted roundtable participants to appreciate the grave implications of indoor air pollution. He drew attention to the debilitating health effects faced by poor families and women in particular because of lack of access to clean cooking, lighting and heating solutions. He felt that the global community and more specifically, market players and development projects alike, had failed to make any appreciable impact to date. Dr. Khosla welcomed the idea of collaboration to reach larger numbers of affected people at a faster rate.

Roundtable participants shared their successes on implementing household energy programs in India. A few examples included:

- The State of Kerala has recently installed 1,300 bio-gas plants.
- The Ministry of Non-conventional Energy Sources representative explained that 150,000 new users are being introduced to bio-gas every year and 800,000 households are using bio-gas according to the latest Census.

Household energy challenges and how participants are working to overcome those challenges was also discussed. Participants agreed that many rural household have switched

over from a conventional chulha to a biogas/improved wood stove. It was pointed out that to make it even a greater success, diversification of feedstock beyond animal dung is required. Dr. Karve from ARTI shared his successful experiment with Compact Bio-gas plant of how the efficiency of biogas system increases by usage of starch. He also gave examples of various feedstocks that can be used in the process. Participants recognized that for most of the homes in India affected by bad indoor air, lighting options used, like kerosene lamps, etc. are also significant contributors to indoor air pollution. To address lighting, projects such as the promotion of solar lanterns by Winrock India, through a USAID sponsored project, were cited as breakthroughs. SHELL has been successful in promoting solar energy option in southern India.

Participants talked about what they could do together, in Partnership to further each other's goals. Some ideas included:

A strong push to work together to engage Self Help Groups because of their potential to become a vehicle to promote alternative energy options.

- Work together to create demand for improved household energy options. By highlighting the benefits to families that have adopted improved cooking, heating, and lighting technology, the participants feel that they would make it more acceptable to the non-user community.
- The "Clean Biomass Energy Program" launched by the World Bank is studying how to mainstream household energy programs into more comprehensive government-led energy programs.

To further strengthen the Partnership in India, participants explored ways to draw on each others' experience and expertise to be more productive and useful, and work together to improve health, livelihood, and quality of life by reducing exposure to indoor air pollution from household energy use. In response to requests to address the need to have reliable information region-wise on product performance, the Ministry of Non-conventional Energy and Mines indicated that they would share their compilation of about 30 models. The need for documentation of best practices and information sharing at national and international level was raised, and participants recommended utilizing on-line resources like the HEDON Network, the Breathe Easy Network and PCIAonline.org. In addition, participants recognized the value of meeting in person and recommended that there be a meeting of household energy stakeholders in similar roundtables twice a year.

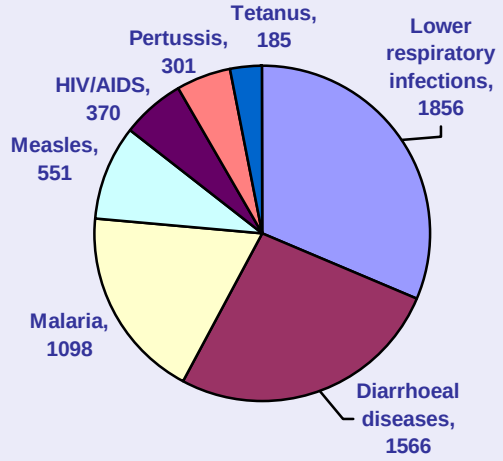
Update on PCIA Website!

The PCIA website is a resource for PCIA Partners and the larger global household energy and health community. Visit the web site for information about PCIA Partner activities; grant opportunities and grantee projects; and news and events of general interest to the Partners and those working with household energy and health issues.

The website now hosts videos depicting clean energy technologies that can improve indoor air quality. Three videos have been posted along with their partner profiles. These are: Solar Household Energy Inc., HELPS International, and Alternative Energy for NW Yunnan, China. To view the videos please visit the profile of the respective partner at http://www.pciaonline.net/partners.cfm

Please send all video related queries to PCIAmoderator@yahoo.com. PCIA continues to recruit members; the Partnership now has over 80 members. New members can register on line by filling out an online registration form on the PCIA website at http://www.pciaonline.org

☼ FACT BOX



Source: Infant Mortality: Leading Killers 2002 (in 000'), World Health Report 2003, World Health Organization

☼ FEATURE ARTICLE

Experience with the Rocket Lorena Stove: A Solution to Reduce Indoor Air Pollution in Uganda

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The majority of the population in Uganda cooks over traditional 3-stone open fires in poorly ventilated kitchens, which leads to very high levels of indoor air pollution. Biomass (firewood, charcoal and crop residues) constitutes over 90% of total energy consumption in the country. Some 95% of the population lives in rural areas. Smoke exposure affects mainly women and young children who are particularly exposed when they are carried on their mother's back during cooking and other household activities. In an effort to reduce exposure to indoor air pollution, the Ministry of Energy and Mineral Development designed and tested an energy efficient Rocket Lorena Stove with support from the German Technical Cooperation (GTZ).

Integrated Rural Development Initiatives (IRDI) has disseminated 2800 of these stoves to date in seven districts in East, West and Central Uganda. All of the stoves were installed with chimneys, and 200 in the Wakiso District included a special smoke hoodpromotion. This implementation has been done in collaboration with Intermediate Technology Development Group (ITDG), supported by the UK-based Health Foundation.

In three Districts (Kanungu, Kabale and Mbale) the intervention aimed at reducing fuel consumption as well as improving the cooking environment.

The improved Rocket Lorena stove is built with locally available materials. The stove prevents heat losses and ensures that 90% of the hot gases

An improved Rocket Lorena Stove

reach the saucepan's surface area. This results in fuelwood savings of 40 to 50%, while reducing smoke emissions. Up to 70% of remaining emissions are removed by the chimney. In tests, the stove demonstrates an average efficiency of 30% compared 15% for a traditional (open) 3-stone fire.

The project created awareness through organizing workshops held throughout the districts and in local communities about environment conservation and the use of clean energy sources. A network was created between district officials, existing non-governmental organizations (NGOs), community based organizations (CBOs), public and private institutions and local communities.

In Kanungu District, 450 Trainers of Trainers in 15 sub-counties have been trained in construction, use and maintenance of the Rocket Lorena Stove. The trained farmers have gone on to train other community members. So far 1500 households have adopted the stove, benefiting from fuelwood savings, increased safety, almost smokeless operation and affordability of the stove.

Men and women in all seven Districts received specific training on the wide range of available interventions to reduce indoor air pollution and associated health effects. In Nsangi the local artisans were trained in the construction and installation of smoke hoods and chimneys. A fuel-efficient kiln was constructed for firing the Upesi portable clay stoves. Women's groups were trained in the production, construction and marketing of the Upesi stove, generating income for the women.

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Behavior change awareness creation to reduce exposure included training women to use dry fuel wood and pot lids, and to keep children away from smoke emission during peak cooking time, given their elevated vulnerability. Men and women were also trained to improve the kitchen by increasing ventilation, including through windows and eave spaces. These actions have contributed significantly to reduction of exposure to smoke.

IRDI also works at national level to raise public awareness of the health effects of indoor air pollution and develops locally acceptable ways of extracting smoke from the homes. As an NGO, IRDI is well-placed to bridge the knowledge gaps between national policy makers and community action. Household energy solutions are highly dependent on local contexts and their household energy systems. IRDI is organizing a national conference on indoor air pollution in February 2005 in Kampala to carry out further activities including lobbying policymakers to take action on indoor air pollution and implement more projects in Uganda so that by 2010, 10% of households have improved kitchens with acceptable and affordable interventions. IRDI is seeking funds to implement indoor air pollution interventions in the 49 Districts in which they do not yet work. IRDI will also lobby international NGOs and governments in developed countries to use 3 to 5% of their development aid budget for fighting indoor air pollution.

GTZ, in partnership with the Dutch Government will also support the dissemination of these improved technologies for households, institutions (schools, health centers) and small and medium enterprises (e.g. bakeries) in an increasing number of districts in Uganda. A scaling-up of this type of project is a prerequisite to achieving the Millennium Development Goals.

☼ HAPPENINGS

Upcoming Events…

ETHOS 2005 Conference
January 29-30, Seattle, Washington, USA

Themes covered by the annual Engineers in Technical and Humanitarian Opportunities of Service Learning (ETHOS) will include:

- Lab research focusing on: insulative materials, efficiency testing, emissions monitoring, safety updates and design issues, gasifier advances, hayboxes/insulative cookers, integrated cooking.
- Field experience, including monitoring of: performance, indoor air pollution exposure, health impacts, user satisfaction, time and socio-economic impacts; awareness raising; stove promotion; involvement of volunteers and local universities; lessons and modification to approaches.
- Efficiency versus effectiveness, and resulting design implications.
- Technology standards: key parameters, constraints.
- Policy issues: role of U.S. partnerships and international donors, country-level leadership, subsidies versus commercialization.

Full information is available at:
http://www.vrac.iastate.edu/~kmbryden/ethos/ethos2005.htm

Online registration is available at::
http://www.vrac.iastate.edu/ethos05/register/

PCIA Meeting
March 23-24, Marrakech, Morocco

(continued from page 1). To register for the meeting, go to www.PCIAonline.org. All participants will have the opportunity to share information and materials from their programs. However, if you are interested in presenting a short case study on one of the topic areas listed above, please provide a brief abstract along with your registration form.

We are exploring the possibility of a field trip on Friday, March 25 and will have more information available shortly. We look forward to working with you in Morocco to increase the use of affordable, reliable, clean, efficient and safe home cooking and heating practices!

South Africa "Domestic Uses of Energy" Conference
March 29-31, Cape Town, South Africa

The 13th international conference on the "Domestic Use of Energy" (DUE) will be held in Cape Town, at the Cape Town Campus of the Cape Peninsula University of Technology (formerly the Cape Technikon). The conference is a forum for professionals and practitioners in all fields of domestic energy to discuss the latest

developments in the effective use of energy in the domestic sector. The importance of the conference is widely recognized as the excess capacity of electricity in South Africa is shrinking noticeably.

DUE focuses on promoting sustainable development particularly in Southern African countries through the more effective use of energy. South Africa and the rest of Africa face many challenges in the wider use and provision of household energy. Issues to be addressed include sustainable energy provision; aspects from the Johannesburg World Summit on Sustainable Development; implications of the Kyoto protocol; environmental legislation; the role of renewables; off-grid electricity supply and subsidized tariffs.

Some of the focus areas for DUE 2005 will include national energy strategies and energy for the rural sector. More emphasis will be placed on the end users.

For more information:
http://www.ctech.ac.za/conf/due/2005due.htm

Global Forum for Sustainable Energy: Biomass
May 11-13, Vienna, Austria

This meeting will explore possibilities for enhancing international cooperation on biomass issues, with special emphasis on building up institutional capacity to promote South-South cooperation on biomass.

A draft program is available and suggestions on topics, experts and invitees are being solicited at:
http://www.gfse.at/gfse5_preannouncement.htm

World Bank **Energy Week 2005**
March 14-16, Washington D.C.

This event will feature presentations and discussions with leading energy development practitioners. The World Bank Group staff working in the energy sector and staff from other sectors will join with external participants to discuss a wide range of energy related development issues. The underlying theme of the event is sustainable development of energy supply and provision of energy services as a prerequisite for economic development and poverty reduction.

Indoor air pollution research and policy option is one of the featured topics. Participants will discuss an overview of the most recent research documenting the health costs of indoor smoke; evaluation of interventions; policies to promote fuel switching and improved use of biomass fuels; and approaches by policy makers. Due to limited capacity, the event is by invitation only. EPA and Winrock will attend the event and provide more details in the next issue of the Bulletin. More information is available at:
http://www.worldbank.org/energy/energyweek2005/

Partner Activity…

PROLEÑA/Nicaragua and Trees Water and People announce the end of Pro-Tortilla Phase 1

Trees Water and People (TWP) and its partner PROLEÑA/Nicaragua have successfully completed the first phase of the Pro-Tortilla project. The project, which received support from the U.S. Rotary Club and The Ashden Foundation, provided subsidies of 30-58% for 800 Ecostoves for small household businesses in Nicaragua. Of these businesses, generally run by single mothers, 70% make tortillas and the rest make other types of food. The businesses usually operate 6-12 hours per day, cooking over traditional open fire stoves, which results in a hot and smoky working environment, low hygiene levels and high fuel costs. According to a follow up survey, 76% of the 800 businesses which adopted Ecostoves were motivated by a desire to eliminate indoor smoke, 20% to reduce high fuel costs, and 4% to avoid trouble with neighbors due to outside smoke.

Using Ecostove in Nicaragua

The project was scheduled to run from January to December, 2004, but all 800 stoves were sold out by the end of September due the high demand for the subsidy. TWP and PROLEÑA aim to secure new funds to continue into a second phase of Pro-Tortilla.

Monitoring Farmer's Indoor Air Quality in Western China

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Monitoring indoor air quality for farmers is one of the important activities of the Sino-Dutch Cooperation Project "Promotion of Rural Renewable Energy in Western China." With Dutch funding and China government support, this project is organized and authorized by the China Association of Rural Energy Industry (CAREI) and implemented by China Agricultural University (CAU).

Background

In most western rural areas including the demonstration sites, the main household fuels include firewood, plant stems, straw, coal and manure bricks. Due to poor stove structure and insufficient combustion, including open fires, stoves without chimneys and traditional Kang (type of bed made of mould and bricks with heating system inside) in northern China, household indoor air quality is greatly worsened. For example, inhaled $PM_{2.5}$, CO, and SO_2 which exceed the national standards in China, have resulted in negative impact on the health of farming families, especially for woman, children and the elderly.

Prof. Kirk Smith and Dr. Qing with students

The Sino-Dutch Project has 14 demonstration sites in western poor areas of Guansu, Sichuan, Hubei and Hu'nan Provinces, aimed at promoting rural renewable energy, improving household indoor air quality, and improving farmer's quality of life through integrated utilization of rural renewable energy technologies and products. Indoor air quality monitoring was included in the project for quantifying the effect of rural renewable energy promotion in demonstration sites, as well as, providing accurate and scientific data for environmental improvement evaluation of the Project. This IAQ monitoring will be conducted twice, both pre and post demonstration constructions.

Students setting up monitors near stove

Experiences and Actions

Ten percent of households in the demonstration sites will be randomly selected for indoor air quality monitoring and measurement. Four main pollutants, $PM_{2.5}$, CO, SO_2, NH_3, have been selected for monitoring in consideration of household energy structure and combustion features.

So far 150 kitchens have been monitored in 10 villages by the IAQ team, which is composed of seven professors and fifteen postgraduates from CAU and other universities. Professor Kirk. Smith, of UC-Berkeley, and post-doctoral student, Dr. David Pennise, provided instruction and assistance in monitoring. The monitoring team will begin to monitor another demonstration site in mid-January 2005.

Kenya Indoor Air Pollution Reduction Initiative Underway

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The Kenya Indoor Air Pollution Reduction Initiative (KIAPRI) is part of Winrock's broader effort to work at the intersection of energy, health, gender, and local economic empowerment. It is also one component in a broader Breathe Easy Fund for Kenya collaboration between Shell Foundation and USAID. Breathe Easy is helping to overcome the technology, marketing, and financial barriers

that limit adoption of less polluting cooking and lighting systems. IT Power and SCODE are also Breathe Easy implementing partners.

Through KIAPRI, Winrock International is helping women's groups in the Ngong and Rongai slum areas of Nairobi, Kenya improve their livelihoods by helping them expand their cookstove production activities. KIAPRI is helping more than 100 women entrepreneurs refine their business skills and marketing methods, and increase the quality of the improved cookstoves and insulated baskets that they produce and sell.

In August 2003, stove expert Peter Scott spent ten days working with the KIAPRI women's groups on stove and kiln design. Mr. Scott helped the local artisans and group members construct more efficient kilns and develop better stove designs in order to reduce production costs. The groups also benefited from discussions on principles of improving combustion efficiency and increasing heat transfer for improved stove performance. In addition, Scott constructed several demonstration household rocket stoves, and an institutional rocket stove through which the Rongai group has reported over 50% less firewood use and significant smoke reduction in their institutional kitchen.

As part of the Breathe Easy team, Winrock is also providing social marketing support for improved stove adoption. Winrock has hired a professional market research company to assess customers' practices and needs, in order to inform the Fund's social marketing effort.

Your comments are welcome!

For comments, suggestions, or news that you would like to share please email us at PCIAonline@yahoo.com. The deadline for contributions to next quarter's bulletin is April 5, 2005.

☼ WHAT'S NEW…?

…in Resources?

World Health Organization publishes first Indoor Air Thematic Briefing

This briefing is the first of a new WHO series that aims to provide a broad readership with accessible facts and figures covering specific aspects of indoor air pollution and household energy. The briefing "Indoor air pollution, household energy and the Millennium Development Goals" highlights facts and figures covering specific aspects of indoor air pollution and household energy. The briefing "Indoor air pollution, household energy and the Millennium Development Goals" highlights the links between household energy and the MDGs, citing contributions made by improved household energy practices towards achieving MDG's long term objectives. WHO is responsible for reporting the proportion of the global population using solid fuel for cooking as an indicator for reporting progress toward MDG 7 to ensure environmental sustainability, and recommends that more explicit links be made between household energy and all other Goals. The briefing is available at **http://www.who.int/indoorair/info/en/iabriefing1.pdf**

Revised Water Boiling Test

The Household Environment and Health (HEH) Project, funded by the Shell Foundation, is developing standard protocols for indoor air pollution monitoring and stove performance tests (SPTs). The stove performance tests are updated revisions of the first tests which were pioneered by Volunteers in Technical Assistance (VITA) in 1985. These protocols are currently undergoing field-tests after extensive in-field training. One of the SPTs, the modified Water Boiling Test, is now available in both English and Spanish at http://ehs.sph.berkeley.edu/hem/page.asp?id=42 . Once revised, these protocols, including the Kitchen Performance Test (KPT) will be available on an open access webpage.

New Ecofagao website

ECOFOGAO, the manufacturer of Ecostove in Brazil, announces its new 2005 web site, now with pages in English and Spanish. www.ecofogao.com.br